15

TECHNOLOGY DEPT.

SCIENCE NEWS LETTER

A WEEKLY SUMMARY OF CURRENT SCIENCE APRIL 17, 1943

Jefferson Memorial

See Page 250

A SCIENCE SERVICE PUBLICATION

Do You Know?

Wheat is a good feed for dairy cows.

The longest concrete *bridge* span in the world has just been completed in Sweden; it is 886 feet long.

A chemical compound which slowly releases *chlorine* into dish-water is used in the Army for sterilizing dishes.

Concrete should be allowed to age several months before painting, until the alkali in it becomes harmless to paint.

Sorghum, grown widely in the Midwest, will endure more heat and drought than any other common fodder crop.

Zinc chloride applied to freshly cut green fence posts will increase their life three or four times by retarding rotting.

Some 80,000 tons of *wood pulp* will be saved in 1943 by the reduction in sizes and stock items of grocers' and variety bags.

A new invisible *insecticide* paint, applied to window and door screens, kills flies, mosquitoes, gnats, moths, and ants trying to get in or out.

A good crop of alfalfa, red clover or wild white clover will fix in the soil as much *nitrogen* per acre as 250 to 1,000 pounds of ammonia fertilizer.

Certain *insecticides* formerly obtained from Japan and used to fight insect pests, are now used in fighting Japs and will not be available to Victory gardeners.

Milk production is reduced more rapidly by too little water than by the lack of other nutrient.

The Federal Petroleum Administration has asked the industry to drill 4,500 *oil wells* this year, 50% more than ever drilled in one year.

Victory gardeners are advised to plant tomatoes, sweet corn, string beans, carrots, beets, potatoes and green leafy vegetables, as these require less work and are less subject to insect troubles.

The Union of South Africa is helping in the war effort by gathering *snake venom* for antidotes.

Vanadium, a rare metal needed in making war weapons, may be recovered from iron ore in New York State.

The *Jackson Hole* National Monument in western Wyoming, recently established by presidential order, contains nearly 222,000 acres of land with primeval forests, beautiful scenery and wild animals native to the region.

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Most articles which appear in* SCIENCE NEWS LETTER *are based on communications to Science Service, or on papers before meetings. Where published sources are used they are referred to in the article.

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MEDICINE

New Wound Antiseptic

Propamidine applied in a jelly to infected burns or flesh wounds kills germs within 10 days. After that wounds rapidly heal.

➤ A NEW wound antiseptic, which kills the germs in infected wounds within 10 days and is also good for burns, has appeared on the medical scene. Its name is propamidine. Summarizing English reports of work with the new wound antiseptic, the editor of the New England Journal of Medicine, published in Boston, points out that the new chemical does not have its anti-germ activity checked by p-aminobenzoic acid, as the sulfa drugs may, nor by peptones, tissue fluids or pus.

The method of using the chemical, as worked out by trial on patients with osteomyelitis, infected burns and infected flesh wounds, is to clean the wound with physiologic salt solution, cut if necessary to expose all infected parts of the wound to the chemical, apply the propamidine in a jelly and seal over with vaseline gauze. Similar dressing and treatment of the wound is given on alternate days for a total of five treatments.

In a trial on five patients with infected ulcers and casualty wounds and eight with burns at an Emergency Medical Service Hospital, the infected wounds and ulcers were germ-free or nearly so in four to 10 days and thereafter rapidly healed or were successfully grafted. The burned patients were relieved of pain, second-degree burned areas healed within 10 days and infection did not occur. Patients with infected wounds and burns that had not responded to sulfanilamide or certain other methods of treatment were also helped by propamidine.

"It is to be hoped," the medical editor states, "that further trial of propamidine will confirm these encouraging reports."

He warns against using the drug in large wounds or in patients with impending shock until further experience has been gained with it. Injection of the chemical into the veins of mice failed to check streptococcus infection and this method of using the drug may be dangerous, judging from a report of such use for sleeping sickness.

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PUBLIC HEALTH

Insect War Being Won

The 45-year war against the malaria mosquito approaching victory in India, the land where this insect was first demonstrated to be carrier.

➤ THE 45-YEAR fight against the malaria mosquito is being won in India, the land where the mosquito's deadly role as malaria carrier was first demonstrated by Sir Ronald Ross, of the Indian Medical Service, Raymond B. Fosdick, president of the Rockefeller Foundation, announced in his review of the Foundation's activities in 1942.

American soldiers fighting in malaria-ridden tropics, as well as millions of civilians, are benefitting from this discovery of an effective weapon against the malaria mosquito.

The weapon, known as the "sweet mist" in the Indian village where its success in controlling malaria was shown, is a pyrethrum spray. This spray, harmless to humans, is deadly to mosquitoes and many other insects, as American householders well know.

The idea that it would prove effective in thatched huts with open eaves and often no walls, which are the homes of the rural population in South India, seemed fantastic to the Rockefeller scientists before they tried it. To their amazement, however, a standardized technic for systematic spraying of every hut and other building proved "remarkably effective" in stopping the spread of malaria. It was possible, moreover, to bring the cost down so low that even impoverished districts can afford this health protection.

The fact that the spray could banish malaria mosquitoes from huts of open construction suggested that it might also prove effective in tents and shelters used by troops in malaria regions. The apparatus required has consequently now been added to U. S. Army equipment.

None of our soldiers or sailors needs to be a victim of that other "savage" mosquito-borne disease, yellow fever, as a result of the discovery in the Rockefeller laboratories, of a successful vaccine against the disease, Mr. Fosdick stated.

An outbreak of jaundice in 1942, "which appeared to be associated with certain definite lots of the yellow fever vaccine," resulted in a change in the method of making the vaccine.

"It is believed that the risk of jaundice has been definitely eliminated," Mr. Fosdick declared.

Jaundice, meantime, has now become a prime objective for research by Rockefeller scientists "in the hope of clarifying the many hidden factors in this relatively obscure disease. The scope of the work will include a study of jaundice as it occurs in the general population as well as in groups which have received injections of serum-containing substances."

Mass vaccinations of civilian populations to protect them from yellow fever and search for a more effective remedy for malaria have been other Rockefeller activities during the past year.

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TO BATTLE GAS—This sailor is ready to enter a fight against poison gas and to remove it from any contaminated object without harm to himself. This is an official U. S. Navy photograph.

PHYSICS

Electricity Book Ready

Pre-induction training book on Fundamentals of Electricity is being distributed to high schools all over nation to aid war effort.

➤ HIGH schools of the nation are being sent through official channels copies of a new pre-induction training book, "Fundamentals of Electricity" written by Dr. Morton Mott-Smith, Science Service physics writer, and published jointly by Science Service and the Westinghouse Electric & Manufacturing Company.

Designed to allow the speedy instruction of high school boys and girls, as well as older men and women, in the fundamentals of electricity so necessary in actual war and production, this book follows a course officially recommended by the War Department for introduction into all high schools.

Thousands in school and in evening classes are expected to study this 68-page book. Thousands more will use it for home study. The book contains 200 figures, 50 photographs and directions for 73 experiments. The text is divided into 40 lessons and followed in each case by 4 to 19 review questions. Anyone can read the lessons with understanding because the ideas are simply expressed and the necessary technical terms are fully explained.

One feature of the book is that practically all the experimental material required can be found around the house or home work shop or secured from the scrap heap. The reader is told how to make the necessary apparatus from such odds and ends.

Magnetism, induction, lightning protection, batteries, resistance, heat, light, generators, motors, transformers, and telephones are but a few of the many subjects covered in this textbook.

In a statement appearing on the cover of the book, James P. Mitchell, director of the Industrial Personnel Division, Headquarters of the Services of Supply, War Department, says:

"In modern mechanized warfare, electricity plays an important role. After the war, electricity will affect our lives in a thousand ways. A thorough understanding of this great unseen force by every high school student in America will be of immediate assistance in hastening the war's end, and also contribute to the building of a finer peacetime world."

In order to make this book available to the largest number of people as an aid to the war effort, Science Service is distributing it on a non-profit basis. Single copies may be obtained postpaid by sending 15 cents in coin or stamps to Science Service, 1719 N Street, N. W., Washington, D. C., and asking for a copy of Fundamentals of Electricity. Schools and study groups may obtain 10 copies postpaid for a remittance of $1.

Science News Letter, April 17, 1943

AERONAUTICS

Expansion of Air Forces Is Exhausting Instructors

➤ THE RAPID expansion of the Army Air Forces is putting such a strain on flying school instructors that if they do not get more rest their health and efficiency will deteriorate.

This is the conclusion of a study of fatigue among instructors at Randolph Field reported by Capt. John E. Dougherty, Medical Corps, Army of the United States, in *War Medicine* (March), published by the American Medical Association, in cooperation with the medical sciences division of the National Research Council.

One of the instructors himself summed up the situation as follows:

"We have twice as many students, and the diversified training has increased about twofold, which should require about twice as much time to explain the maneuvers; however, we have only half the ground time to do it in. The students are not getting as thorough instruction and cannot progress as rapidly as they should. The instructors are tired and cannot give the students the attention they deserve."

The study of twenty instructors picked at random showed:

The younger instructors were slightly less affected than the older ones. Periods of greatest stress occurred when day and night flying were necessary. Seventeen of the twenty required one or two hours' additional sleep. The instructors felt tired all the time and especially in the late afternoon. They were more irritable toward students, friends and wives, less patient with the students, less concerned about the students' progress, and were less alert mentally and more careless, frequently finding themselves "in dangerous situations which under former conditions did not occur."

Lower blood pressures, low results of the Schneider test and heterophoria were also observed in many of the instructors studied.

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POPULATION

Drafting Young Married Men Endangers Future Manpower

➤ DRAFTING young married men may produce very serious results in terms of future manpower, especially as this war with Japan probably won't be our last. This warning is given by Dr. Constantine Panunzio of the University of California (*Scientific Monthly*).

"The United States and Japan will face a manpower situation somewhat similar to that which France and Germany faced in 1940," states Dr. Panunzio. Wanting us fully to realize the problem which vitally concerns the future of our nation, he continues, "Even if we should deal Japan a knockout blow now, in the next generation we may be obliged to confront a nation with an even greater manpower than it now possesses."

About three-quarters of all births occur to fathers between the ages of twenty-three and thirty-seven, Dr. Panunzio points out. In the United States, where our population is fast becoming stationary, it is a serious matter to call any considerable number of young married men to war. We must avoid laying the foundation for a manpower shortage.

At the beginning of the last war all Frenchmen of military age were called. A million fewer babies were born in France during this period, a loss which contributed to France's downfall in 1940. Germany also suffered a decided decrease in babies during the war years, but unlike France, she made up for it by a rapidly-growing population.

England's far-sighted policy during the last war was designed to encourage child-bearing. Married men were deferred until 1916, and allowances were made for wives and children. In this manner she was able to sustain her birth-rate to a remarkable degree, and this extra strength may have been a decisive factor in her resistance against Germany.

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MEDICINE

Confused With Heart Ills

Attacks of pain spreading to heart, shoulder and arm found to be due in some cases to rupture of disk between vertebrae of neck.

➤ "AN UNDETERMINED number of patients" believed to have heart trouble, arthritis of the upper spine, bursitis, neuritis of the brachial plexus, and two other less familiar ailments probably are suffering from a rupture of one of the disks of fibrocartilage between the vertebrae in the neck. This is the opinion of Dr. R. Eustace Semmes, of Memphis, and Major Francis Murphey, Medical Corps, Army of the United States.

They report finding this condition in 11 patients. In seven, the diagnosis was verified at the time of surgical operation to relieve it. The other four have not yet been operated on. Details of the cases and operation appear in the *Journal of the American Medical Association*. (April 10)

Each of the first four patients seen had had numerous cricks in the neck off and on for months or years. Then came a sudden, disabling attack of pain which spread to the heart, shoulder blade and down the arm. In one case the attack came when the patient's neck was jerked suddenly while driving his car. In another, it came as the patient bent to tie his shoe. Each patient, along with the disabling attack of pain, had difficulty in breathing and a sense of impending death. One of them turned blue.

Each patient, two of whom were physicians, thought he had a heart attack, either coronary thrombosis or angina pectoris. The pain in the heart wore off, after a few days or weeks, but that in the shouder and arm got worse. Moving the neck, sneezing, coughing and straining made the pain worse. The index and middle fingers were numb and weak and the arm cold in some of the cases.

Heart trouble, in spite of the suggestive symptoms, and various other ailments were ruled out by examination, and "unilateral rupture of the sixth cervical intervertebral disk with compression of the seventh cervical nerve root" was suspected. At operation under local anesthetic, the suspected seat of the trouble in the neck region of the spine was exposed to view and gentle pressure applied to the nerve root. This pressure caused the typical pain the patient had been suffering, and the ruptured disk was found immediately below the affected nerve root. Compression of the nerve root as a result of the rupture had been causing the pain. When the pressure was removed by the operation, the pain was completely relieved in two of the first three patients and considerably relieved in the third.

As the condition becomes more widely recognized, many patients with less intense pain will probably be seen. If the pain is not disabling, more conservative treatment than the spinal operation will probably help such patients, the doctors suggest.

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POLE GARDEN—Planted not for growth but to measure decay, these poles form a novel sort of victory garden for the Bell Telephone Company.

CHEMISTRY

Garden of Poles Planted To Test Preservatives

➤ VICTORY GARDENS of poles are being planted at the Bell Telephone Laboratories. These miniature telephone poles, however, are not expected to grow, but are being used for experimental purposes to select substitute materials for war-scarce preservatives.

Before planting, the stick specimens, which are cut from seasoned boards of mature southern pine, are impregnated under pressure with creosote or other preservatives. This is done in a sealed steel cylinder where a cycle of changing pressures controls the amount of preservative retained.

Before and after treatment, the sticks are weighed to determine the amount of preservative retained. Then they are planted to a depth of several inches in "gardens" where different climatic conditions prevail, and are inspected periodically for decay. From the rate of decay in these samples is determined the effectiveness of the various preservatives and varying pressures used.

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● RADIO

Saturday, April 24, 1:30 p.m., EWT

"Adventures in Science" with Watson Davis, director of Science Service, over Columbia Broadcasting System.

Dr. Kirtley F. Mather, professor of geology, Harvard University, and national president of the American Association of Scientific Workers will give one of a series of three talks on Science From Shipboard.

Monday, April 19, 9:15 a.m., EWT; 2:30 p.m., CWT; 9:30 a.m., MWT; and 1:30 p.m., PWT

Science at Work, School of the Air of the Americas over the Columbia Broadcasting System, presented in cooperation with the National Education Association, Science Service and Science Clubs of America.

"Unfinished Business" will be the subject of the program.

MEDICINE

Donors Save Wounded

Serum albumin and blood plasma restore life chance to thousands of fighting men. Some require as many as 22 transfusions.

➤ SEVERAL THOUSAND cases are already on record in which emergency transfusions of dried blood plasma and serum albumin have given a new lease on life to American wounded. Through a miracle of modern science, blood donated by American men and women is saving today the lives of soldiers and sailors in North Africa, the South Pacific and wherever our men fight.

Men like Bill Sullivan, severely battered during the battle of the Coral Sea, who received eight transfusions. Or Torpedoman Sam Kurtz, who lost both legs when his ship was torpedoed in the North Atlantic, and was saved by twelve transfusions of plasma. Or Albert James Heick, who was so severely burned during the attack on Pearl Harbor that it took twenty-two transfusions to pull him through.

According to the Surgeons General of the Army and Navy, "the use of plasma is beyond question one of the greatest medical advances in the past century." For unlike the whole blood transfusions attempted during the last war, plasma need not be matched with the blood type of the wounded fighter.

Reduced to a dry, straw-colored powder, it may be transported and stored without refrigeration, and used under the most adverse combat conditions simply by mixing it with distilled water.

Need Very Great

Importance of plasma in treating shock and burns is further indicated by the tremendous amounts of blood requested by the Army and Navy from the Red Cross. No one can say how much will be required before the war is over. But more than a million and a quarter pints already have been delivered and present Red Cross quotas call for a minimum of 50,000 additional pints a week throughout the present year. It is possible that even more will be required.

Although simply explained, the method by which blood is processed into dried plasma is extremely complicated, requiring special equipment and the utmost technical skill.

Each day, the blood collected by the Red Cross is shipped to biological laboratories designated by the Army and Navy. There it is centrifuged to separate the plasma from the blood cells, pooled, frozen, and dehydrated. The bottles of dried plasma are sealed in vacuum, after which they are hermetically sealed in tin cans with the tubes and needles necessary for a transfusion. With the plasma goes a bottle of distilled water. From this unit the plasma can be prepared for transfusion within three to five minutes.

Although the use of plasma is still relatively new, even newer blood substitutes are being developed. Outstanding among these is human serum albumin, which is also being processed for the Army and Navy.

More Concentrated

The use of serum albumin as a blood substitute is a development for which Dr. Edwin J. Cohn, professor of physical chemistry at Harvard Medical School, is largely responsible. Generally speaking, it is used in the same type cases as plasma, and in nontechnical terms may be described as a more highly concentrated type of plasma. For example, one unit of serum albumin is roughly the equivalent of two units of dried plasma as a blood substitute. However, it requires approximately 3½ pints of blood to obtain one unit of serum albumin, compared with one pint of blood for one unit of plasma.

Serum albumin is expected to supplement rather than replace dried plasma, each product having certain qualities not possessed by the other. Perhaps the principal advantage of albumin over plasma, at least from the utilitarian standpoint, is that the package requires less space—a feature in which the Navy is particularly interested. For instance, a kit containing three units of serum albumin is somewhat smaller and weighs about a pound less than a kit containing only one unit of plasma.

Details of the method by which blood is processed into serum albumin are at present regarded as a military secret. However, it may be pointed out that albumin is a protein extracted from human blood and that some of the processing is carried on at temperatures below 32 degrees Fahrenheit.

One unit of serum albumin is composed of slightly less than nine-tenths ounce of albumin dissolved in one-fifth pint of physiological salt solution. Like plasma, it requires neither typing nor refrigeration and can be kept at temperatures ranging from slightly above freezing to approximately 120 degrees Fahrenheit. But unlike plasma, serum albumin is in solution and nothing has to be added to it before the transfusion is given. It is put up in glass vials with rubber stoppers at both ends, into which tubes are inserted and the transfusion given by injection into the veins.

The blood donor project through which the Red Cross is collecting the blood for the armed forces, ranks as the largest single controlled medical undertaking of all time. The blood is collected through fixed centers operated by Red Cross chapters in key cities near the processing laboratories, and through mobile units which visit surrounding communities within a radius of sixty miles.

Donating a pint of blood is painless and has no harmful after-effects, the body replacing the blood within a few days. Donations may be given at Red Cross Blood Donor Centers by anyone in good health between 18 and 60.

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PUBLIC HEALTH

Number of War Blinded Will Not Be Very Great

➤ THE SPECTACLE of tens of thousands of helpless, blinded veterans of this World War is unfounded, in the opinion of medical scientists. Not more than a couple of hundred, it is understood, have been blinded so far in all the extensive fighting by soldiers of Great Britain and the colonies. Less than 250 of our own soldiers were blinded in World War I.

The *Journal of the American Medical Association* (April 10) says that public fund-raising campaigns for the war-blinded will not be necessary because Congress has already taken all steps necessary to make sure that blinded veterans of this war will have prompt and adequate medical treatment, and physical, mental and social rehabilitation.

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BLOOD—Donated to the Red Cross for the Army and Navy, it is whirled in this laboratory centrifuge at 2,500 revolutions per minute. This separates the plasma from red and white corpuscles.

PSYCHOLOGY

Mental Peace Needed

Armistice for hate and return from violence when the war ends is called as necessary for mental health as is cessation of hostilities.

➤ A RETURN from violence on the world's mental front will be necessary when the war finally ends, Dr. Raymond B. Fosdick, president of the Rockefeller Foundation, predicted in his annual report just issued.

"If, after the victory of the Allied powers, a psychiatrist could be called upon to prescribe for this sick world, he would undoubtedly say that it is as necessary to 'return from violence' on the mental front as it is to cease physical hostilities," Dr. Fosdick said. "The destructive war of the spirit must be stopped. There must be an armistice for hate. The world must slough off its mood of violence if it expects to have a rational, healthy future."

Spiritually this mental attitude of violence means emphasis upon antagonism rather than upon cooperation, and upon fear rather than faith, he explained. Intellectually it means that emotionalism takes the place of objectivity, and that propaganda is substituted for truth. In political and social life it means selfish partisanship instead of considerations of total interest, and the substitution of factional advantage for general welfare. In short, Dr. Fosdick said, the mental attitude of violence means the fragmentation of society, in which the whole is forgotten for its parts and the universal is lost in the partial.

"These tendencies, always present in human life, are augmented by the complicated structure of modern society," the report continued. "The size and scale of modern life have outrun man's experience, his patience and his capacity to understand. The complexity of the social and industrial order affords favorable opportunities for the concealment of injustice. Conscious of wrong, bewildered by facts as well as propaganda, men slip into some segment of the total circle—some loyalty, however fragmentary, which seems to them intelligible. With distorted perspective their own special advantages and their small fraction of society become not parts of the whole, but the whole itself. They confuse love of freedom with their particular interest in freedom. To them whatever is justice for their faction is justice for all.

"When such a state of mind possesses a group, the employment of force as a means of gaining ends becomes a logical consequence.

"It is surely not too soon to discuss the problems of peace, which will prove even more difficult than the problems of war. Nor is it too soon to plan for the return from the mental attitude of violence and begin the formidable task which this about-face will involve. This is the task of the teachers, the philosophers, the clergy, the journalists, the statesmen, the poets, the novelists, the social scientists and all who search for universal values and totality of vision. Upon these men and women must rest the burden after the war for our mental disarmament, and for seeing that the welfare of mankind is not forgotten in the conflict of lesser loyalties."

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NUTRITION

Nutrition Foundation Furthers Protein Research

➤ RESEARCH on human requirements for the amino acids, which are building blocks of proteins in such foods as meat, milk, fish and eggs; on the problem of supplying suitable fats to the armed forces in all parts of the world; on food requirements in aviation and in desert warfare; and a search for varieties of common vegetables which contain the highest nourishing qualities are among the many studies sponsored by the Nutrition Foundation, Inc., in New York.

Progress in all of them is being made, Dr. Charles Glen King, scientific director, reported to the board of trustees of the Foundation which was organized just one year ago.

Grants totalling $148,550 were authorized for the coming year, George A. Sloan, president of the Foundation, announced. During the year since its organization, he said, the Foundation has made research grants totalling $316,000 to 40 universities.

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HORTICULTURE

Victory Gardens Planted By Soldiers in Camp Areas

➤ SOLDIERS in training, awaiting their turn to go overseas for a crack at the Nazis and the Japs, are putting in Victory Gardens of their own, where suitable soil is available in the training camp areas, the War Department states. Substantial acreages have already been planted to vegetables in several Southern camps already, and as spring moves northward more will be spaded up in camps farther up the map.

Gardening is to be a strictly voluntary off-time recreational activity; no one is excused from exercises with rifle and bayonet to wield a hoe. Nevertheless plenty of willing workers have already been found. At one air field, the gardening has been taken over by 12 men who were professional truck-raisers in civil life, who figure that it gives them a chance to keep their hand in at their regular business, besides being just a little extra shove to send the Axis a bit faster toward its finish.

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NUTRITION

Stretching the Fat Ration Is Duty of Housewife

➤ FAT IS ONE of the daily diet "musts." Most people like it so well for its flavor and the staying quality it gives to meals that they need no urging to eat it. A number of hints for the thrifty housewife who wants to stretch her family's fat ration have been issued by the New York State College of Home Economics.

First rule, of course, is to use all left-over fats, both the drippings and that trimmed from steaks, chops and roasts. Fresh pork drippings are good for seasoning vegetables and making gravy. Beef fat or drippings, if fresh, may be clarified and added to lard or other soft fats. Such combinations can be used as shortening in muffins and spice cakes, for gravies and sautèing and in puddings.

Sausage, ham and bacon fats, because of their flavor, it is pointed out, are especially good for frying and for warming up foods. Mild bacon fat that has not been allowed to smoke can be used in muffins, cornbread, cakes, gingerbread and cookies. The flavor is not noticeable if the baked products are used within a day or two, but it becomes stronger on standing. It is a good idea to use strong-flavored fats in spice cakes or other baked goods that have a pronounced flavor of their own.

Here is an important don't on the use of fat: Don't ever let it smoke or burn. Smoking is a signal that the fat is beginning to break down chemically. The resulting product makes a poor food, "one that can kill a dog if eaten continuously," the New York home economists warn. Fat that has been burned or allowed to smoke gives an unpleasant flavor to the food and may irritate the digestive tract. The fumes of smoking fat have a sharp odor and will irritate the mucous lining of nose, throat and eyes. Fat that has heated to the smoking point, moreover, turns rancid rapidly.

All fats, including oils, should be kept covered in a dark, dry, cool place. Meat drippings particularly need a cool place because they may contain meat juices which spoil quickly.

Science News Letter, April 17, 1943

AGRICULTURE

Livestock Rehabilitation Is Planned at Cornell

➤ GREECE, rising from her ruins after the war, will have better cattle, sheep and other livestock as a result of a program of improvement initiated at Cornell University, under a grant of $2500 from the Near East Foundation.

A thorough study will be made of methods to restore and rebuild the food resources of that country, including possibilities with milk goats, dairy cows, chickens, geese, turkeys, sheep, hogs and rabbits.

Work is under the direction of Prof. F. B. Morrison of the animal husbandry department, and C. S. Stephanides, a native of Greece and a Cornell graduate.

At least 15 advisers from the staff of the College of Agriculture will assist, most of whom have done special work in foreign countries, including Turkey, Albania, North Africa, Costa Rica, New Zealand, Hawaii, Mexico, China and the Philippines.

Mr. Stephanides' work will take him to agricultural colleges and experiment stations and on certain farming trips, especially in Louisiana, Texas, New Mexico, Arizona, and California, for a study of feed and livestock problems.

The new program of reconstruction has the approval of the Office of Foreign Agricultural Relations, U. S. Department of Agriculture, and of Herbert H. Lehman, director of foreign relief and rehabilitation, who has asked that plans be turned in as soon as possible.

Science News Letter, April 17, 1943

IN SCIEN

AGRICULTURE

Food More Pressing Than Guayule Rubber Production

➤ FOOD CROPS for production in 1943 are more important at the present moment than guayule plantings for rubber in 1945. Since the recommendations of the Baruch committee were issued urging a greatly increased guayule raising program, the situation has changed.

"The need for the maximum food production has become more pressing, and the outlook for synthetic rubber has become somewhat clearer," declare Secretary of Agriculture Wickard and Rubber Director Jeffers.

Both men feel that it is not desirable to use any large quantity of land for planting the rubber plant this year as the first rubber yield would not be until two years from now. Not only is the land needed for food crops but the manpower is needed also.

The Department of Agriculture is planning to have plenty of guayule planting stock available in the nurseries in case a further survey shows by mid-summer that emphasis should shift again to rubber production.

Science News Letter, April 17, 1943

INVENTION

Enamel Coating on Pistons Reduces Engine Knock

➤ ENAMEL coatings on the face of a gasoline engine piston, and on the inner surface of the cylinder head, will materially reduce knocking and also minimize the formation of "shellac" or "varnish" on the piston skirts and hard carbon on the piston head, states Frederic H. Emery of Bedford, Ohio, in the preamble to patent 2,311,039.

To the glassy enamel, containing cobalt to make it stick better to the iron, the inventor also adds alumina or other refractory substance to increase its heat-resisting properties. The enamel, usually though not necessarily minus the refractory, may also be applied on the underside of the piston and on the radiating fins of air-cooled motors, to speed up transfer and dissipation of heat.

Science News Letter, April 17, 1943

E FIELDS

MEDICINE

Better Typhoid Vaccine May Come from Germ Shell

➤ A BETTER vaccine for protection against typhoid fever may result from research at the Biochemical Research Foundation of the Franklin Institute, reported by Dr. Ellice McDonald, director, in his annual report of the Foundation's activities.

Using chemical and physical methods to split the typhoid fever germ into many portions, the scientists obtained some starch-containing fractions of typhoid fever germs which were non-poisonous to mice.

These fractions are believed to be the outer covering of the typhoid germs which normally serve to protect the germs against the white blood cells of the body's defenses. The outer covering of the germ also contains the substance, called antigen, against which the body develops specific defense mechanisms called antibodies.

Isolation of a non-poisonous, antigenic substance from the germs may mean that this substance can be used as a vaccine against typhoid fever, instead of the whole germ.

Science News Letter, April 17, 1943

GENERAL SCIENCE

Guggenheim Fellowships Awarded 11 Women, 53 Men

➤ MORE WOMEN than ever before are recognized in the annual award of fellowships by the John Simon Guggenheim Memorial Foundation. The list includes 11 women and 53 men. Each will receive an annual stipend of approximately $2,500. Those in war work or in the armed services will continue in this essential work until the war is won, and then receive the benefits of the award.

Moral philosophy seems to be emphasized in making the awards. A group of fellows will devote their studies to attempting to gain an understanding of the principles by which ethical judgments or judgments of human values are formed. The theme which underlies the diversified list of fellowships granted this year is the understanding of the civilization in which we live, particularly the understanding of the Americas.

No appointments were made this year in fields of the physical and mathematical sciences as it was felt that the first-rate persons in these fields are in direct war work or in essential teaching work. The list includes one Filipino poet, one Negro economist, and one Chinese artist.

Eighteen annual awards of Guggenheim fellowships have now been made. The Guggenheim Foundation was created and endowed by the late United States Senator, Simon Guggenheim, and his wife as a memorial to their son John. Fellowships are awarded to scientists, artists, writers, and others, who have shown creative abilities in their previous work, and made productive contributions to knowledge or to the arts.

Citizens of the United States and Canada, and of certain Latin American countries, are eligible to receive fellowships on equal terms. Men and women, married or single, of any race or creed, are equally eligible. The awards this year total $140,000.

Science News Letter, April 17, 1943

PUBLIC HEALTH

Week a Year Per Employee Is Lost Due to Illness

➤ ILLNESS accounted for the loss of 5½ days of working time per year per employee in a typical cross section of American industry studied by experts of the Industrial Hygiene Foundation, collaborating with the U. S. Public Health Service.

These studies, which concerned illness not due to industrial accidents, were announced through the annual report of the Mellon Institute of Industrial Research.

When only absences of eight days or longer due to illness were considered for the 1941 period in 14 companies the annual per employee loss was 2½ days. Eight per cent of the men and 10.5 per cent of the women employed suffered these illnesses. When absences of one day or longer were considered, estimates showed that 50% of the men and 82% of the women took time off due to illness.

In one company the sickness absenteeism loss amounted to $180 per employee annually when reduced efficiency before and after illness was estimated and included.

Science News Letter, April 17, 1943

MEDICINE

Cellophane Tubing Used In Concentrating Human Serum

➤ SAVING of 75% in weight and space needed for shipping human blood serum to the theaters of war is promised by a very simple apparatus in which the essential element is a short piece of cellophane tubing of the kind regularly sold under the prosaic title of sausage casing. How it is built and used is described in *Science* (April 2) by Dr. Gerald M. Needham and Dr. Paul F. Dwan of the University of Minnesota Hospital, Minneapolis.

The tubing is tightly attached as a kind of skirt to the open end of a glass bell, like a bent-necked bottle without a bottom. The lower end of the tube is folded over a narrow strip of wood and clamped tightly against a second strip. A bottle of serum is connected with the neck at the top, and the whole set-up is heated under steam pressure to sterilize everything.

The water from the serum evaporates slowly through the sheet-cellulose bag, under encouragement of a constantly moving current of warm air, until the volume is reduced by three-fourths.

Then the condensed serum is poured, still under aseptic conditions, into a storage bottle, which is kept at low temperature in a refrigerator. Before using, sterile distilled water may be added to restore normal volume.

Science News Letter, April 17, 1943

CHEMISTRY

Chemical Society Medal Awarded Harvard Scientist

➤ RESEARCH on defenses against the poisonous gases and sprays used in chemical warfare won for Prof. Arthur B. Lamb, dean of the Graduate School of Arts and Sciences at Harvard University, the 1943 William H. Nichols Medal of the New York Section of the American Chemical Society.

Citation in the award praised Prof. Lamb for "his investigations in inorganic and physical chemistry, leadership in defense against poison gas, and as a teacher, administrator and editor."

During the first World War, Prof. Lamb was a lieutenant colonel in the Research Division of the Chemical Warfare Service. Developments under his direction included activated charcoal, active soda-lime used in gas masks and detection and removal of carbon monoxide.

Science News Letter, April 17, 1943

GENERAL SCIENCE

Jefferson, Man of Science

His "supreme delight" led him into study of geography, geology, botany, zoology, medicine, agriculture and chemistry. Was an inventor.

See Front Cover

➤ CONJURE UP in your mind's eye five images of Thomas Jefferson, whose birth on April 13, 1743, 200 years ago, is being celebrated this year. Stand them side by side. In the center is Jefferson the lawyer, statesman and public servant. To the right is Jefferson the music-lover, violinist and singer; and Jefferson, the horseman and lover of outdoor sports. To the left stands the scientist and inventor, and also the landowner and farmer.

These five Jeffersons together constitute the man whom history records as one of the most versatile persons in America's early days. His music and his horsemanship were his recreation. His inventions were his hobby. His "tranquil pursuit of science" was his "supreme delight," to use his own words. He inherited nearly 2,000 acres of land and added another 3,000 by purchase. His father-in-law left him a 5,000-acre plantation to manage as an additional farming activity.

As a scientist Jefferson was interested in many branches; geography, geology, botany, zoology, medicine, agriculture, chemistry and the natural sciences. The practical side of all these appealed to him. He once wrote, "I have wished to see chemistry applied to domestic objects, to malting, brewing, making cider, bread, butter, cheese, soap, and the incubation of eggs."

Was Paleontologist

Although the subject had not yet been named, Jefferson was a great early paleontologist. The fossil remains and the bones of prehistoric animals delighted him. He secured a number of the bones of an animal about the size of a bull moose found in a cave in Virginia. Because they included a large claw he called the animal the "big-claw" or Megalonyx. The bones were sent to Philadelphia and the animal "reconstructed." They are still there with the Academy of Natural Sciences. The animal was a giant ground sloth, extinct for some 30,000 years.

Jefferson collected many prehistoric bones through friends in Ohio, Kentucky and elsewhere. His great interest in paleontology was awakened by his contacts in Paris with leading scientists; in the days when Jefferson represented the United States government there, Paris was the center of the sciences, particularly botany and zoology.

Thomas Jefferson, while president and at other times, seems to have had a keen sense of the important part science would play in the future of the American nation. His foresight is responsible for much of the scientific work done by the government then and later. He is credited with being the originator of the patent system. The idea of a National Bureau of Standards is in a report by him to Congress in 1790. The report suggests plans for establishing uniformity in the coinage and weights and measures of the United States.

Wanted Coast Survey

In 1806 President Jefferson recommended a coast survey, on which Congress took favorable action in February 1807. The continuation of this survey work is carried on by the Coast and Geodetic Survey. Other recommendations had much to do with the establishment later of the Naval Observatory, the Hydrographic Office and the Weather Bureau.

Further evidence of Jefferson's great interest in the sciences is shown by two exploratory trips which he made possible. He sent Col. Zebulon Pike to explore the peak that now bears Pike's name. He asked Congress to authorize the expedition of Lewis and Clark. He paid from personal funds $2,500 to help finance the trip. The report of these two men, made from their notes written daily while traveling up the Missouri River and crossing to the Pacific, is filled with scientific observations resulting from instructions received by them from the President.

Jefferson as an inventor never took out a patent. In a large measure he is responsible for the creation of the U. S. Patent law and he was the first administrator of the law. Under it patents were issued by a board composed of the Secretary of State, the Secretary of War, and the Attorney General. He was Secretary of State and chairman of the board. The work in connection with patenting was carried out in the State Department and the books and records kept there. Jefferson and his contemporary inventor, Benjamin Franklin, both decided to contribute their inventive genius to their country and to their fellowmen as they contributed their abilities in affairs of state.

Improved the Plow

Scientific principles were the basis of many of Jefferson's inventions. The moulding board of a common plow may not seem to be scientific but it is. Jefferson sought a proper shape to turn the soil with the least effort, to break the soil properly, aerate it, and to cover the turned-in vegetation to add humus to the land. It was certainly regarded as a scientific achievement by several French scientific societies which awarded him honors for his invention.

His pedometer sounds more scientific. With it a distance could be measured roughly by walking it. A recording instrument was carried in the watch pocket. A tape led from the instrument through a hole in the bottom of the pocket, down "between the breeches and drawers" to a knee band. This recorded every step taken, by one leg at least.

Jefferson's "whirligig" chair may not be a scientific device but it was an important invention. It is the great-great-grandfather of all the swivel chairs for which Washington is famous and without which perhaps modern governments could not exist. A combination walking-stick and outdoor seat did not prove as prolific. His hemp machine for breaking and beating hemp into fiber is one of his greatest inventions.

Architecture is a science. Jefferson's great work as an architect was the designing of the original buildings of the University of Virginia, still standing and in use. It is his greatest memorial. Monticello, his home, is also his work. American people are familiar with its outline, as it is now on one face of the new Jefferson five-cent piece.

Science News Letter, April 17, 1943

Ramie shrubs which grow all over China and can be grown in the United States, produce a fiber eight times as strong as cotton that has high lustre, takes dye, resists moisture, and can be spun and woven with existing machinery.

BOTANY

May Grow Loofa Sponge

Needed in American warships as engine filters, the Japanese-grown "dish-rag" gourd may be cultivated in America.

➤ JAPANESE-GROWN loofa sponges are no longer available, but they are needed in American warships to help lick the Japs. They are used as filters in certain types of marine engines installed in fighting boats, transports and cargo vessels by the Navy, Coast Guard and Maritime Commission. They can be grown in America, and America can become independent of the Japanese supply.

Loofa sponge is the closely entangled fibrous mass in the inside of the loofa gourd. It is an effective filter to separate out oil and grease in boiler-feed water without absorbing the water. Marine sponges do absorb the water and cannot be used as filters in these engines.

Loofa sponge, luffa sponge, dish-rag gourd sponge, or wild cucumber sponge, whichever name you want to use, is not a true sponge of the familiar marine variety but it is used for many of the same purposes. It grows both wild and cultivated in Japan, China, India and in certain islands in the Far East. A wild variety, that grows in the West Indies and Central America, is satisfactory for making the sponges. A cultivated crop could be raised each year and America assured independence of the Asiatic supply, most of which came from Japan in pre-war days.

The gourds are ready for harvesting six months after planting. They are some 20 inches long, and hang from the vines which grow on trellises to permit regularity of shape and freedom from ground fungus. One end is cut off and the gourd soaked in water for five or six days. The tough fibrous center is then easily removed, washed, dried and packed for shipment.

Japanese use loofa sponges for the bath, but they are a little too rough for the American lady. The Japs also use them to clean their shoes, and for making toys, mattings, sandals and hats. They extract a clear liquid from the stem which is used for medicinal purposes and in skin lotions. Sometimes they eat the pulp, but the food value is questionable, and dish-rag gourd soup is not apt to replace good American okra soup on the American table.

Science News Letter, April 17, 1943

PHYSICS

Gales to Test Planes

Synthetic winds up to 600 miles an hour and temperatures down to 67 degrees below zero to be available in new tunnel at Wright Field.

➤ MANUFACTURED gales with velocities up to 600 miles an hour and controlled temperatures down to 67 degrees below zero Fahrenheit are expected in a new aircraft testing tunnel to be built soon at Wright Field, it was announced in York, Pa., by the engineer in charge of the construction of the cooling system to be used. The giant air conditioning plant is being assembled under the direction of J. G. Bergdoll, Jr., chief engineer of the York Ice Machinery Corporation. It will produce four million cubic feet of refrigerated air a minute, he stated.

"A man in ordinary winter clothing could survive only a few minutes if he were placed directly in the path of the refrigerated air stream," he explained. "Even if his body could withstand the 600-mile force of the gale, he would be frozen stiff in a few minutes."

The tunnel will be shaped like the letter "O" and will be 600 feet long. The gale will be made by a 40,000 horsepower motor. The rapidly moving air will pass through cooling coils in which are circulated tons of a calcium chloride solution chilled to 40 degrees below zero by two giant refrigeration machines. These cool the air to seven degrees below zero.

In making a stratosphere test, models will be placed in a steel compartment in the throat of the tunnel, an airtight door closed, and air pumped out, lowering the pressure to simulate atmospheric conditions at various altitudes. It will be lowered from the normal sea level pressure of 14.7 pounds per square inch to less than 2.7 pounds, to simulate pressures found at altitudes of above 40,000 feet.

"In the new wind tunnel, temperature of the air stream drops naturally from seven degrees below to 67 degrees below zero as the tunnel narrows down from its widest part in the center to the smallest opening at the throat. This narrowing has the effect of transforming static into velocity pressure," Mr. Bergdoll stated. "It actually lowers the pressure while the speed of the gale is increased, resulting in a terrific temperature drop without the need for additional refrigeration equipment."

Science News Letter, April 17, 1943

A new *helium* gas plant is now in operation in Texas; this, with four additional plants not yet completed, will bring the 1943 production of this lightweight noninflammable gas to 40 times the prewar production.

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NUTRITION

Prescriptions for Grocer

Wholesome food urged in place of vitamin capsules for prevention and treatment of dietary disease. A and D concentrates in winter an exception.

➤ "IN THE general prevention of dietary diseases and their treatment, the prescriptions should be filled at the grocery store rather than drug stores," Dr. Edward H. Hatton, Northwestern University professor of pathology and bacteriology, declared at the meeting of the Chicago Dental Society.

Sufficient vitamins can and should be eaten at the family dinner table as wholesome foods, the speaker maintained, with the exception of "obscure and chronic conditions when the administration of large doses of vitamin concentrates for relatively long times has yielded good results."

"Possibly the only vitamin concentrates that merit general use, and then only during the winter months, are A and D, either as concentrates or in the form of cod liver oil preparation."

Foods should also be the prescription for minerals. In general, the use of mineral salt preparations has little to recommend it.

There is no place in therapeutics where there is so much room for good judgment and common sense as in the prevention and treatment of disease through nutrition, the speaker said in criticizing the faddists and extremists.

Pointing out that dietary deficiencies are important to dentists since they involve the oral cavity, Dr. Hatton cited vitamin C deficiency as the one most commonly affecting the mouth.

Food dislikes and poor methods of preserving and preparing food were called the main reasons for the surprising prevalence of vitamin C deficiency.

Sulfa Drugs No Cure-All

➤ SULFA DRUGS are not a cure-all for dental infections, Dr. F. D. Ostrander of Ann Arbor, Mich., warned the meeting.

Although the sulfonamides have valuable dental uses, they have not given the spectacular results that have resulted from their use in medicine.

The greatest successes of the sulfas have been in treatment of extensive infections of dental origin, in cases where heart disease makes preventive measures necessary, and as local applications in war wounds, civilian injuries or infected extraction sockets.

"In no case," Dr. Ostrander pointed out, "is the use of a sulfonamide a substitute for careful operative, surgical or aseptic technic, nor for adequate postoperative care."

Science News Letter, April 17, 1943

NUTRITION

B Vitamins Now Number at Least 12

➤ WHILE MOST of us are still struggling to remember that there are three B vitamins, thiamin, niacin and riboflavin, and to get our daily quota of them, research scientists have run the count of B vitamins up to at least 12.

The growth requirements of rats, guinea pigs, monkeys and even microorganisms have been the chief sources of information about the newer B vitamins, and their exact role in human nutrition is not yet established. What has already been discovered about them, however, suggests, according to Prof. C. A. Elvehjem, of the University of Wisconsin, that further research may give scientists dietary means of handling diseases for which prevention and cure are still unknown just as vitamins and diet today are used to prevent scurvy, pellagra and rickets.

Folic acid, for example, is a new B vitamin that may be the key to prevention or cure of a blood disorder in which there are two few white blood cells. The condition occasionally develops after sulfa drug treatment has been given for a certain period of time, but it also develops independently of sulfa drugs.

One clue to a possible dietary means of controlling the condition came from the discovery that rats also develop it when given sulfaguanidine or succinyl sulfathiazole. These two drugs stop the development of microorganisms in the rat intestinal tract which normally manufacture some of the B vitamins. But the blood disorder also develops in monkeys on diets lacking folic acid. In both rats and monkeys the disorder can be prevented by folic acid. Perhaps it develops in humans after sulfa or certain other drugs because the patients had been on rather short rations of folic acid and could not stand further depletion by the drug of their reserve supply of this vitamin.

Biotin, inositol and p-aminobenzoic acid are other new B vitamins which recent evidence suggests play a role in human nutrition. The B vitamin tally is completed by pantothenic acid, pyridoxine, choline, two factors needed by chicks and one or more needed by guinea pigs.

Science News Letter, April 17, 1943

MEDICINE

Should Act Now to Prevent Postwar Misuse and Waste

➤ DOCTORS and manufacturers of drugs and surgical and medical supplies should act now to avoid postwar waste and misuse of these materials such as followed the last war, Col. Charles F. Shook, of the U. S. Army Medical Corps, declared at the National Conference on Planning for War and Postwar Medical Services held in New York under the auspices of the Carlos Finlay Institute of the Americas.

Following the last war, Col. Shook said, millions of dollars' worth of medical supplies were dumped on the market, causing ruin to many manufacturers. Even more serious, he added, were the numerous examples of inferior or spoiled medical equipment which was sold and used to the danger of public health. He referred specifically to surgical sutures which had been allowed to spoil and were then used, causing dangerous infection.

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BOOKS

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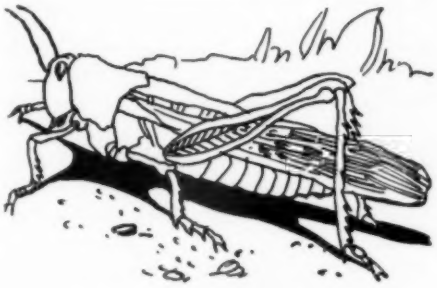
ENTOMOLOGY

NATURE RAMBLINGS *by Frank Thone*



Pampered, But Not Pets

➤ GRASSHOPPERS live on a luxury diet compounded of dried brewers' yeast, skim milk powder and alfalfa meal, in cages in the laboratory of Dr. Mykola H. Haydak at the University Farm of the University of Minnesota. Their food is served up in appropriate little dishes, made by prying the cork liners out of crimped caps from soft drink bottles. Water is supplied in little vials with cotton plugs, at which the little 'hoppers suck.

All this doesn't mean that Dr. Haydak is so fond of grasshoppers that he keeps them for pets. Far from it: they are the destined victims of tests of the relative deadliness of various kinds of insect poisons. He finds it easier and cheaper to rear his insect "guinea pigs" from eggs found in the soil than to go out and capture them in the wild.

Some of the grasshoppers were permitted to live out their full life span unmolested in the cages. Under constant indoor conditions, with electric light as their "sun" a large part of the time, the first deaths of adults occurred 45 days after hatching, and 43 days later half of the adults were dead. The last insect, a male, died on October 26 at the approximate age of 152 days.

Science News Letter, April 17, 1943

Each *potato* seed piece should contain at least one vigorous eye and weigh over an ounce.

Hatcheries reported the number of *chicks* on order March 1 to be 77% greater than last year.

Most textile fabrics can be made *fire-resistant* by rinsing in a gallon of water and one pound of ammonium sulfamate.

NUTRITION

Gluten Makes Bread

It is the gluten in wheat flour that makes it better for bread than any other cereal. Glutens hold ingredients together.

➤ THANK the gluten in wheat for the quality of our daily bread, Dr. John C. Baker, chief chemist of Wallace & Tiernan Co., Newark, N. J., told the American Association of Cereal Chemists.

"Gluten gives wheat flour the remarkable property of bread making shown by no other cereal. The properties of the gluten control the characteristics of the bread," he said.

Gluten separated from wheat flour "is a material that is like unvulcanized rubber, particularly like heated unvulcanized rubber, which when stretched and released does not spring back to its original position."

Dr. Baker reported on extensive laboratory studies made under his direction on the effect of oxidizing agents upon the baking properties of flour.

The glutens hold the ingredients together in the dough. They must possess strength.

"One can take a gluten and increase its strength by thorough washing or by fermentation with yeast or by manipulation in an oxidizing agent, the effects in all cases reaching the same maximum," the speaker continued. "This indicates that the materials which are responsible for the change in gluten properties by washing and fermentation or oxidization are to be found in the water soluble portion of the flour extract and point to it as a profitable problem of research."

The greatest perfection in the bread making art, Dr. Baker pointed out, is to obtain a loaf in which the crumb or soft inner part contains "the maximum number of cells arranged in the most uniform bubble structure. The object of bread making . . . is to produce the maximum number of small bubbles in the dough and to retain them or renew them throughout the bread making process."

Science News Letter, April 17, 1943

RESOURCES

Few Women Training

➤ QUALIFIED women are failing to take advantage of the free scientific training now being offered throughout the country. This charge was made by George W. Bailey, of the Office of Scientific Research and Development, at a conference in Washington held by the Institute of Women's Professional Relations.

Scientifically trained women, particularly physicists, are urgently needed to replace men leaving for the armed forces. Women already adequately trained are known to be scarce, but women are not enrolling in sufficient numbers in the tuition-free courses to meet the present demand, Mr. Bailey asserted. Today only 22%, or 118,000 out of 900,000 of those taking the engineering, science, management war training courses, are women.

Too few women seem aware of the widespread opportunities for scientific training and they appear reluctant to tackle technical subjects, he continued.

A number of fields are being opened to women for the first time. The U. S. Weather Bureau is offering training courses in meteorology. The Civil Aero-

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nautics Administration is paying women in training for specific technical jobs. Some industrial concerns are even giving nominal salaries to women while they are being educated in first-rank engineering colleges.

Science News Letter, April 17, 1943

METALLURGY

New Method Reported For Silver-Plating Magnesium

➤ SILVERPLATING objects made of magnesium by the electroplating method presents many difficulties which perhaps may now be overcome by new processes. After the war magnesium will probably be used very widely on appliances in common use, as the manufacture of magnesium has very greatly increased as a war measure. It is lighter than aluminum and can be used for many of the same purposes.

Magnesium is a white, lustrous metal, the lightest of metals in common use. Large pieces oxidize superficially and it is sometimes desirable to protect household articles with silver.

A method by which silver can be electroplated on magnesium was given at Pittsburgh by Francis J. Bowen and L. I. Gilbertson, of Washington State College, at the meeting of the Electrochemical Society. These men collaborated in the development of the process.

The magnesium must be brought to a bright finish before electroplating. This can be done with fine emery paper, followed by a cloth-covered wheel. It is then cleaned in a bath containing sodium carbonate, tri-sodium phosphate, sodium hydroxide and ammonium lauryl sulfate.

The electrolytic bath contained silver cyanide, potassium cyanide and boric acid. The silver electro deposited on magnesium by this treatment was in the form of white, smooth, hard, adherent silver films.

Science News Letter, April 17, 1943

MEDICINE

Drug Being Sought

Important part of war effort is work in many laboratories to find more effective drug against the venereal diseases.

➤ A HIGHLY important but little known part of the medical war effort is the intensive work now in progress in many laboratories throughout the United States to find a more effective and more acceptable prophylactic drug against the five venereal diseases, syphilis, gonorrhea, chancroid, lymphogranuloma venereum and granuloma inguinale.

The scope and urgency of the problem were reported by Dr. Geoffrey Rake, of the Squibb Institute for Medical Research, at the meeting of the New York Bacteriologists' War Research Projects Group.

"Although the rate of new infections with venereal disease in the armed services of the United States, 4%, is the lowest rate in our military history, there are reasons for concern," Dr. Rake stated, "for this rate is three and one-half times the civilian rate.

"It will result in the loss of some 8,000,000 man-days a year and it may be expected to increase unless active measures are taken to prevent it.

"Added to this is the fact that the distribution of our armed forces throughout the world and particularly in the tropical and subtropical zones will mean an increase particularly in those venereal diseases, lymphogranuloma venereum, chancroid and granuloma inguinale, about which least is known from the prophylactic point of view."

Present methods of prophylaxis, if properly applied, are probably efficacious against gonorrhea and maybe against syphilis, but are of unknown value so far as the other three venereal diseases are concerned, Dr. Rake said. Even with regard to syphilis and gonorrhea, however, many improvements are urgently needed, for example, to provide more effective penetration of the drug into the infected tissues and to make the prophylactic easier to use.

Disinfection Needs Further Study

Disinfection, of utmost importance in protecting health in military and civilian life, needs further study to bring about more satisfactory practical application, the bacteriologists were told by Dr. M. L. Isaacs, of Yeshiva College.

Science News Letter, April 17, 1943

GEOLOGY

Great Magnesium Source In Nevada Deposit

➤ MAGNESIUM in major quantities, for the war effort and for the light-metal era that will come after the war, can be obtained from an immense deposit of dolomite near Las Vegas, Nev., in the Boulder Dam area, the U. S. Bureau of Mines declares. Bureau chemists state that they have developed a process for converting the dolomite (a magnesium-containing limestone) into magnesia, and also an electrolytic method for extracting the pure magnesium from the latter compound.

Sufficient engineering data are already in hand, the chemists added, to justify the erection of a small commercial-scale plant to process the dolomite and thus pave the way for full development of the great beds by private industry. One privately owned plant already operating in the vicinity is using magnesite that has been hauled more than 1,000 miles by a roundabout route from another dolomite deposit in Nevada, and it is believed that the expense and delays thus involved might be obviated through the development of magnesite-producing establishments at the Las Vegas site, where total available dolomite amounts to an estimated 400,000,000 tons.

Science News Letter, April 17, 1943

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⚙ *BANANA FLAKES, a recently developed product, was formerly shipped in tins from Brazil. The dehydrated bananas are now sent in bulk cartons to New York, where they are packed in paper cones.*

Science News Letter, April 17, 1943

⚙ *AN IMPROVED individual package for ready-to-eat cereals also serves as a bowl. It is now being supplied to Army messes. After opening the perforated front panel of the handy package, the sealed wax paper bag inside is slit open and sugar and cream poured on.*

Science News Letter, April 17, 1943

⚙ *STEEL COILS are laced into the rubber tread of a new type of airplane tire to prevent skidding during landings and take-offs on icy airport runways and in arctic regions. Many of the tires are now being used by the Air Forces.*

Science News Letter, April 17, 1943

⚙ *ALL-PAPER CARTONS for a variety of products have been developed with a click top to be assembled and filled by hand in the absence of machinery. The cover is part of the carton, and can be easily flipped open, then closed again by slight pressure.*

Science News Letter, April 17, 1943

⚙ *SPONGE RUBBER gaskets coated with natural or synthetic rubber by a special process is a new development being widely used in war equipment, such as tanks and planes. Peacetime uses in the automobile and refrigerator industries are expected.*

Science News Letter, April 17, 1943

⚙ *"BOMB-SIGHT LEVELS" to help make layouts for contour farming are being made by farm boys. A cheap wooden carpenter's level, a small mirror and scrap tin from a tobacco can are used. Front and rear peekholes are made of the tin, and a support to hold the mirror so that the spirit bulb may be seen when sighting through the peekholes.*

Science News Letter, April 17, 1943

⚙ *BIFOCALS and other multifocal lenses may be made in less time and at less expense by a new process just patented, each lens being ground from a single piece of lens material. The lenses are partly finished by the manufacturer, who grinds the surfaces of different curvatures on the inside of the lenses. Several lenses are ground simultaneously. The prescription grinder has then only to grind the outside to the proper single curvature.*

Science News Letter, April 17, 1943

⚙ *TANK PUMPS made of plastic and wood have been developed for home fire protection, but can also be used for spraying fruit trees, shrubs and flowers and for whitewashing.*

Science News Letter, April 17, 1943

If you want more information on the new things described here, send a three-cent stamp to SCIENCE NEWS LETTER, *1719 N St., N. W., Washington, D. C., and ask for Gadget Bulletin 152.*

AERONAUTICS

"All-Glass-House" Plane For Photographic Work

➤ AN AIRPLANE designed to be as nearly transparent as possible is the subject of patent 2,314,949, granted to R. W. Palmer of Whittier, Calif., and assigned to Vultee Aircraft, Inc. This plane is intended for use in photographic and observational work, in which maximum visibility in all directions is a prime necessity.

The fuselage consists of a skeleton framework of metal ribs, that crisscross to form a patern of diagonally spaced square panels. Plexiglass or other safety transparent panes fill in these openings, making the craft virtually a flying glass house.

Science News Letter, April 17, 1943

NUTRITION

No Ration Points Needed for Wild Greens

➤ IF THE FRESH vegetables with which you eke out your ration points get too expensive for the budget, especially at this season before your Victory garden greens are ready for cutting, remember the wild greens that grow along roadsides and even, sometimes, on the front lawn. They furnish vitamins and minerals and will add to the variety of meals, an important point these days.

First of the wild greens to come are dandelions. Also available this season, and in fact at all seasons since it is an evergreen, is watercress. Check with your local health department about its safety, however, as in some localities the water it grows in might be polluted.

Besides these two greens, housewives may be able to serve, as a change from spinach and lettuce, stinging nettle, marsh marigold, dock, milkweed, chicory, wild onion, lamb's quarter, summer mustard, pokeweed, sorrel and purslane or pursley.

All members of the wild carrot family should be avoided. This includes Queen Anne's lace and other related plants with dissected, leafy foliage, having white or yellow umbrella-like flowering and possessing a strong odor when crushed. Stems and leaves of plants with woody stems should also be avoided.

Only the tender young leaves of plants should be selected for eating. By the time the plants are in flower their flavor will be too strong. The greens, like those you buy at the market, should be thoroughly washed and all imperfect parts discarded. Young crisp leaves are nice for salad, but these wild greens can also be cooked and served like spinach or chard and served with butter or a sauce.

Science News Letter, April 17, 1943

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First Glances at New Books

➤ THE War Department has outlined a simple course in elementary electricity which it hopes that everyone likely to enter the army or industry will study, especially in high school. FUNDAMENTALS OF ELECTRICITY (*Science Service*, 15 cents, 10 copies for $1), a beautifully illustrated publication of 40 lessons, with 250 diagrams and photographs, has been written especially by Morton Mott-Smith, Science Service's staff writer in physics, for this purpose. A quarter million copies are being distributed without charge to the nation's secondary schools in cooperation with Westinghouse as a public service and a contribution to the war effort. Individuals and study groups that wish an effective introduction to this fundamental science can obtain copies at a nominal price for their own use.

Science News Letter, April 17, 1943

➤ THE ANNALS of The American Academy of Political and Social Science for March contains valuable and interesting geography background studies of SOUTHEASTERN ASIA AND THE PHILIPPINES, by Lennox A. Mills. These studies will prove very helpful to those who desire to obtain accurate information relative to these war-torn areas and their peoples. It contains also brief book reviews of new literature in the field of the social sciences. (*American Academy of Political and Social Science*, $2.00 paper, $2.50 cloth.)

Science News Letter, April 17, 1943

➤ A CONTRIBUTION to the exact knowledge of an interesting group of land-shells is THE CYCLOPHORID OPERCULATE LAND MOLLUSKS OF AMERICA, by Carlos de la Torre, Paul Bartsch and Joseph P. E. Morrison. It will be welcomed by all zoologists who know a good job in taxonomy when they see it. (*Govt. Print. Off.*, 65c.)

Science News Letter, April 17, 1943

➤ A BORN FARMER who has become a leader in the new movement for a nationally integrated and planned agriculture, Howard Tolley vigorously presents his interpretation of that movement in THE FARMER CITIZEN AT WAR. As he sees him, the American farmer has long had too hard a struggle against adverse economic forces to be terrified by the stresses of war; he has learned too well how to cooperate with his fellows to accept either imposed regimentation or a return to the chaotic disorganization from which he has emerged. (*Macmillan*, $2.50.)

Science News Letter, April 17, 1943

➤ AIRMEN of the future as well as aviation minded citizens will find military aeronautics described fully in ARMY FLYER by Lt. Gen. H. H. Arnold and Maj. Gen. Ira C. Eaker (*Harper & Bros.*, $2.50). This book, literally written in the air, by two of the outstanding and top ranking American Army Air Forces officers traces the career of a flying cadet from the time of his induction to retirement. Proceeds from the sale go to the Army Air Forces Trust Fund.

Science News Letter, April 17, 1943

➤ GENERAL ZOOLOGY, by Tracy I. Storer, is a new, well organized, very solidly written textbook for college classes. The student who manages to absorb a fair fraction of what is packed into its nearly 800 pages can be counted as at least the beginnings of a zoologist. (*McGraw-Hall*, $3.75.)

Science News Letter, April 17, 1943

➤ COMPLETE and unashamedly technical, ELEMENTS OF MINERALOGY, by Alexander N. Winchell, appeals to a limited audience but is highly useful to that one. (*Prentice-Hall*, $5.)

Science News Letter, April 17, 1943

➤ PRINCIPLES underlying various types of naval operation, illustrated mainly by examples from World War I, are the material of NAVAL WARFARE: AN INTRODUCTORY STUDY, by Comdr. John Creswell, R.N. Defense against air attack, the convoy system and landing on hostile shores are sample topics whose appositeness needs no argument. (*Chemical Publ. Co.*, $4.)

Science News Letter, April 17, 1943

➤ JUVENILE scientists will find a wealth of material in FUN WITH SCIENCE by Mae and Ira Freeman (*Random House*, $1). Fundamental principles of science are set forth by means of simple and entertaining experiments which can be done at home without complicated equipment. Excellent photographs illustrate the experiments.

Science News Letter, April 17, 1943

• Just Off the Press •

BIOLOGY: THE SCIENCE OF LIFE—Mary Stuart MacDougall and Robert William Hegner—*McGraw-Hill*, 963 p., illus., $4.

CHILE: A Geographic Extravaganza—Benjamin Subercaseaux—*Macmillan*, 255 p., $3.

CONTRIBUTIONS TO EMBRYOLOGY: Carnegie Institution of Washington—*Carnegie Institution*—246 p., illus., $4.50 paper, $5 cloth binding. Volume XXX: nos. 187 to 197, publication 541.

A COURSE IN THE FUNDAMENTALS OF ELECTRICITY—Morton Mott-Smith—*Westinghouse Electric and Manufacturing Co., and Science Service*, 65 p., illus., 15c each, $1 for ten copies.

EGYPT AND THE SUEZ CANAL—Frank H. H. Roberts, Jr.—*Smithsonian Institution*, 68 p., illus., free upon direct application to the Smithsonian. (Smithsonian Institution War Background Studies Number Eleven.)

EVERYDAY ELECTRICITY AND MAGNETISM—A. C. Penney—*Longmans, Green*, 248 p., illus., $1.75. English textbook.

HEART DISEASE IS CURABLE—Peter J. Steincrohn—*Doubleday, Doran*, 193 p., $1.98.

THE HOME VETERINARIAN'S HANDBOOK: A Guide for Handling Emergencies in Farm Animals and Poultry—E. T. Baker—*Macmillan*, 191 p., $2.50.

LABORATORY EXPERIMENTS IN PHYSIOLOGY—W. D. Zoethout—*Mosby*, 256 p., illus., $2.25. Third edition.

THE MAMMALS OF EASTERN UNITED STATES—W. J. Hamilton, Jr.—*Comstock Publishing Co.*, 432 p., illus., $4. Handbook of American Natural History, volume II.

MODERN MARINE ENGINEER'S MANUAL: Volume II—Alan Osbourne, editor-in-chief—*Cornell Maritime Press*, 1200 p., illus., $4. This volume is the completion to the Modern Marine Engineer's Manual.

PIONEER TO THE PAST: The Story of James Henry Breasted—Charles Breasted—*Scribner's*, 436 p., $3.50.

RELIGION, SCIENCE, AND SOCIETY IN THE MODERN WORLD—Alexander D. Lindsay—*Yale Univ. Press*, 73 p., $1.50.

SCIENCE, PHILOSOPHY AND RELIGION: THIRD SYMPOSIUM—*Conference on Science, Philosophy and Religion*, 438 p., $3.

SUB-ATOMIC PHYSICS—Herbert Dingle—*Ronald Press*, 272 p., illus., $2.25. (This book forms Volume II of a course of Physics for Aeronautical Students, complete in two volumes. Volume I is Mechanical Physics.)

VERTEBRATE PHOTORECEPTORS—Samuel R. Detwiler—*Macmillan*, 184 p., illus., $4. "A general account of the usual cells of vertebrates with particular emphasis upon their structure, development, distribution, and certain aspects of their physiology."